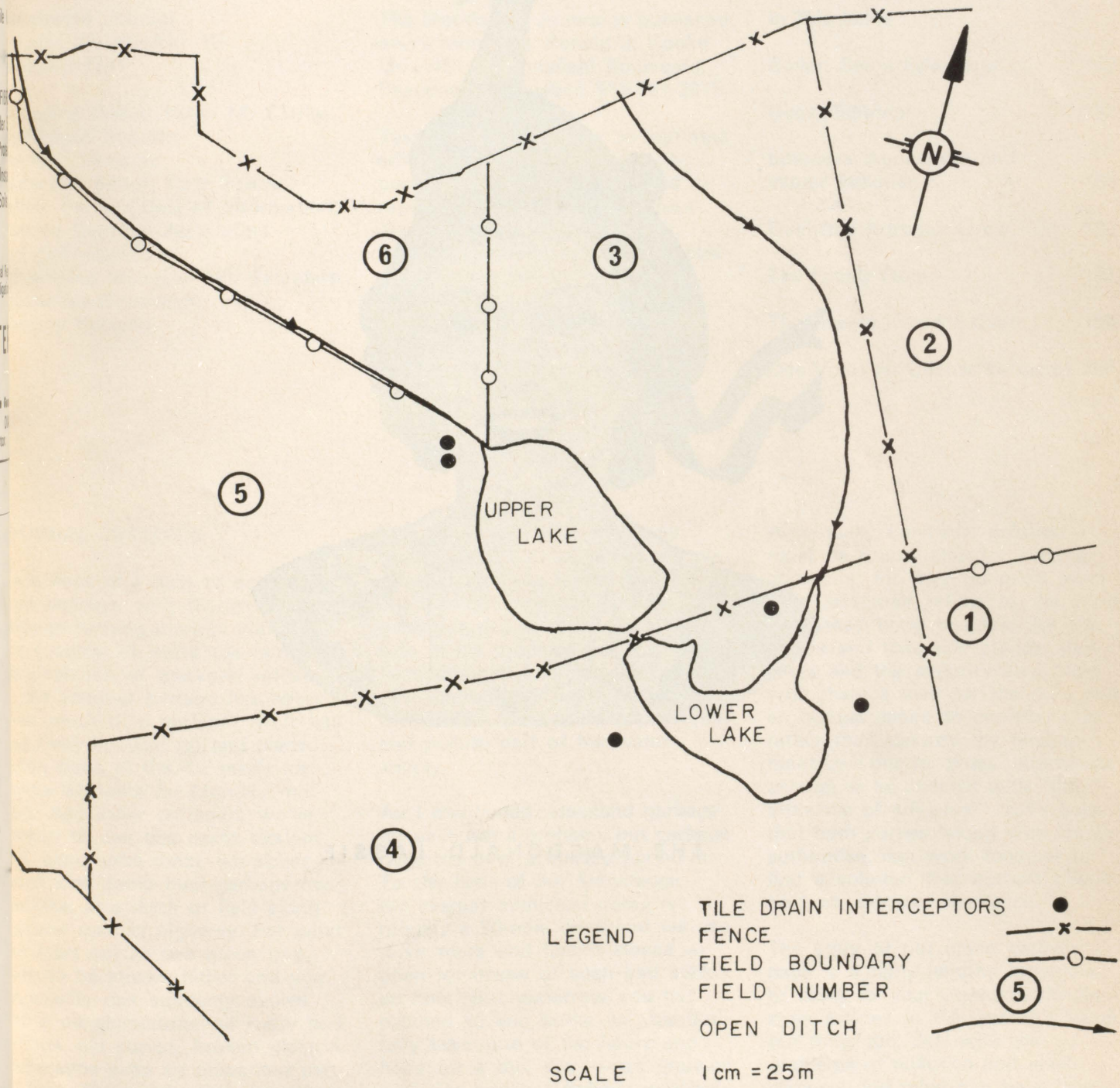


The Macdonald Journal

OCTOBER 1971





THE MACDONALD LASSIE

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JOURNAL JOTTINGS

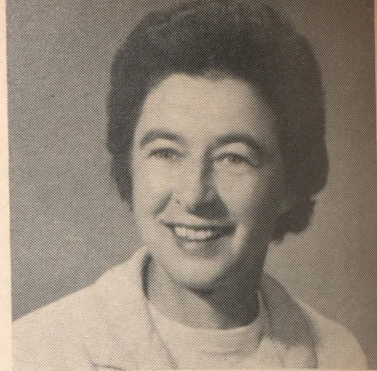
's a heck of a note to come back
from holidays with thoughts of
garbage running through your mind.
For roughly 12 years the normal
accumulation of weekend refuse
at the summer cottage has never
been much of a problem — it has
just been bundled up and placed
in the trunk of the car ready for
pickup at home on Monday morn-
ing. Any other cottagers we've
spoken to use this same system
and, along with them, we abhor
those who dump their garbage near
the lake, in a ditch or field along
a gravel road or highway. For what
can start out as one green bag
soon to be strewn hither and yon
by wildlife can suddenly evolve
into a conglomeration of rusty bed-
springs, old stoves, broken glass
and maybe even an unwanted car
or two. The result. One unauthor-
ized, ugly dump — an eyesore
to all who pass and a justified
source of anger for the unfortunate
landowner.

This point was very forcefully
brought home to us when we dis-
covered that one farmer had found
out that not only had garbage
been dumped in the ditch at the
side of his property but that it had
been dumped into the creek that
runs through his land and under
the road — there to lie, rot and rust
and pollute part of his water
supply.

As I mentioned, weekend garbage
for us is not a problem, but garbage
collected over a holiday period is.
To the best of our knowledge,
the closest municipal dump is
roughly a 30-mile drive and we can
drive there and find it closed —
open tomorrow at such and such
an hour. But tomorrow you had
planned to sun bathe so you duti-
fully take note of the hours and
hope for a dull day — an unusual
wish for precious holiday weather
— when you can make the
30-mile trek again.

A mutually beneficial solution
must be found. One for summer
cottagers, for they do bring more
than just their refuse to the rural
area; they bring business for the
towns and road-side stands, pay
taxes and the majority also bring
with them a love for the area and
an honest desire to contribute to,
rather than destroy the environ-
ment; and one for those unfortunate
enough to be saddled with "the
effluence of affluence". Let's hope
that both parties, along with local
authorities, can work together to
find a solution that bothers people
on both sides of the fence.

The story of our green garbage
bags is a fairly lengthy preamble
to bring to your attention the two
main articles in this month's issue
but they, too, deal with the
problems of pollution and waste
disposal and what can be achieved
by working together towards a
common goal. They make for
excellent reading!
Hazel M. Clarke



Mankind appears to be entering an era which may be classified historically, as "enlightened". If so, it will not be due merely to another renaissance of the arts — though this may also occur. It will be due primarily, I think, to a more realistic awareness of the environment, a heightened respect for nature and a sincere resolve to live in harmony with each other and the universe.

Man's record of stewardship as a tenant on earth is not good. We have tended to use wantonly, for short-term expediency, the fossil fuels; to destroy the wildlife, some species to the point beyond recall; and to unconcernedly pollute the air and water. Our human population is still spiralling upwards with relatively little concern for the serious socio-political and ecological problems which will inevitably result if the present trends continue unabated.

For the last hundred years man has been so dazzled by the brilliance of his own inventiveness — which has given us the machine, and the technology developed in this machine age — that he could not look beyond it to the natural environment which sustains life. However, by using a technological invention, television, and by other means, biologists and ecologists are providing information which is

arousing the interest and curiosity of many people in the wonders of the universe.

We must credit the young people, too, for the part they are playing in helping us to look honestly at the fundamental problems concerning man's future as a species on earth. Their desire for knowledge is shown by the enthusiastic response to the courses concerned with ecological problems. They are determined to pursue the causes of pollution and are supporting organizations which are dedicated to improving the environment. They are influencing governments to put our earthly house in order by considering first things first.

As agriculturalists and food scientists we welcome the interest now being shown by so many people, both young and older, in the basic problems of man's existence. A measure of this concern is the increasing frequency with which the quality of food is mentioned in the news media. There is concern about what is happening to food. Unfortunately, there is also widespread ignorance about many aspects of agriculture and food processing; for example the role of the inorganic fertilizers and pesticides in the production of food crops is being challenged, often on the basis of scanty knowledge and pseudo-scientific thinking. Nevertheless, the fact that people are interested should be encouraging.

At Macdonald College we are enthusiastic about the new orientation of the Faculty of Agriculture and the School of Food Science. This does not involve any change in the basic philosophy of our role as a teaching and research centre. We have built our programs on the strengths which already exist in this Faculty for studies related to the environment, the production of food and the nutrition of animals and humans.

The options for specialized studies in the Faculty are designed to develop in our graduates the ability to solve problems in the production and distribution of food. It is very encouraging to realize that many people share our concerns and that there is more interest today in these problems than was manifest earlier in this century. It is also encouraging that young people are finding careers in the major areas of studies offered here, namely, agricultural sciences, agricultural engineering, biological sciences, renewable resource development, food and consumer sciences, to be worthwhile and challenging.

Prof. Helen R. Neilson,
Director,
School of Food Science.

INTENSIVE AGRICULTURE AND WATER POLLUTION



recent years, the problems of waste disposal have increased and become increasingly complex. Waste disposal problems in the urban environment have largely been the result of rapid population growth and urban concentration. More people in the same space, higher incomes, and more convenience foods have resulted in mountains of waste material which must be disposed of — somehow or other.

The rural environment has also been subject to the pressures of

population increase and urban concentration, but with a difference. For the farmer, increased urban population and concentration represents an increased and more concentrated market. The same basic economic and social factors which are causing urban concentration, have resulted in decreased rural population, higher labour costs, increased farm mechanization and larger producing units. The whole problem is made even more complex by the increased income, higher standard of living, growing diet conscious-

ness, and increased consumption of animal protein, which has characterized our society for the past generation. Today's market conscious dairy farmer, poultry producer and beef lot operator is locating as near as possible to his expanding city market, and expanding his production to suit that market. Beef lots with 50,000 animals are not uncommon.

Not too long ago, good agricultural practice involved disposal of animal wastes produced on a given farm unit by returning them to the

soil of that unit, or immediately adjacent units. The school book nitrogen cycle shows an equilibrium where nitrogen is taken up from the soil by plants, eaten by animals, and returned to the soil. A farm is a producing economic unit which depends for its existence on sale and export of its product — grains, grasses or animals. Obviously, some of the nitrogen is exported along with the product, and some addition is required to keep the cycle in operation. So the practice of nitrate fertilization of grain and grass fields has grown to the point of being standard practice. Unfortunately, nitrates are very soluble, and are rapidly leached from the soil. To ensure sufficient residual it has also become standard practice to be generous with the fertilizer, particularly since inorganic fertilizers have decreased markedly in price. Accordingly, nitrate levels in the groundwater system may be rising to worrisome levels, and when these nitrates reach surface waters, algae production is stimulated. Thus, we have established the basis of the current agricultural paradox.

The animal producing units are growing and moving nearer to the cities (or cities are expanding to meet them), resulting in accumulation of animal wastes in places where not enough land is available for the traditional land disposal procedures. At the same time, the grain and grass producing units are deprived of the nitrogen that the animal wastes would have provided, and must rely on increasing amounts of commercial fertilizer.

Natural processes and inter-relationships are very complex and man's efforts to simplify them for his own benefit usually result in problems for him and his environment. Traditionally, man has violated the natural order of things, and then realizing his error, has retreated, leaving nature to cope with the problem. Usually, nature has responded by re-adjusting to the changed conditions and gone on — almost as before. Nature does have astonishing recuperative powers, and it is reasonable that low cost land disposal methods, involving natural microbiological systems would be resorted to, almost automatically. The developing practice of using agricultural land as a dumping ground for urban and rural waste is the result.

Fortunately, man is becoming a little more aware of what a dangerous game he is playing, and how fragile is the chain which connects and maintains all life on earth. He is a little less ready to dash down the first path of expediency which presents itself, and a little more ready to investigate the probable consequences beforehand. The growing numbers of scientists of all disciplines who are concerned about the environment and who are now working in the field of environmental control is a very encouraging development. Environmental studies are complicated because the natural system with which they deal are complicated. By contrast, man-made systems are deliberately made extremely simple. As an example, chickens are produced in response to market demands, fed a balanced diet for a given number of weeks and then sold. The process is predetermined, and



controlled at every step. Compare this simple straight line process with the "production" of a wild duck — the rigours of the spring migration, the hazards of nesting, the problems of food supply, predation, weather, water supply and water level. To properly predict the production of wild ducks involves an interdisciplinary approach. In addition to wildlife biologists, there must be a contribution by engineers, hydrologists and meteorologists. Even an expert in the trends of ladies fashions would be useful in predicting the demand for beaver skins because beaver dams have an obvious effect on water levels, which will certainly affect ponding and the amount of water in the duck marshes.

In the same way, a study of what happens to the soil and receiving waters as a result of modern farming cannot be conducted without an examination of all facets of the problem. Such a study necessarily involves the co-ordinated efforts of a group of specialists in different disciplines, each investigating within his specific area, but cooperating with workers in other disciplines to arrive at an overall assessment.

Only a few institutions have the necessary combination of people, equipment and land resources to conduct a study of this type. Macdonald College is one of the few. Because of this unique position, Macdonald was selected by the Federal Department of Fisheries and Forestry to conduct an investigation into the extent



Far left: Collecting a sample from tile drain manhole. Top: Site for the water pollution study is to the rear of the College beef barns. Shown here is the Upper Lake. Bottom: Algae growth reached its maximum in the middle of summer on the Lower Lake; the wire cage is used to collect hatching insects.



The watershed feeding the Upper Lake, comprising fields 5 and 6, is being fertilized with manure and a commercial inorganic nitrogen fertilizer. The Lower Lake watershed, comprising fields 1, 2 and 4 receives commercial inorganic nitrogen fertilizer only. Weed control and other biocide treatment are the same for both watershed areas. It was decided that corn and grasses are representative crops for this area and these were planted on both watersheds.

The project is organized into sections, each with a specific test, rather than having tasks allocated departmentally. This approach is more effective and is more in keeping with the interdisciplinary nature of the project.

It is planned that nutrient balance and transport studies will be carried out by regular determination of the nutrient content of manure, soil, drainage water, lake water and crops. A similar investigation is underway into pesticide contamination of soil runoff water and receiving water.

Faunal studies are being carried out on the soil and water habitats to determine any effects of the nutrient type and quantity added to the fields. Macro fauna are being examined for both habitats and the water is being subjected to intensive microbiological examination.

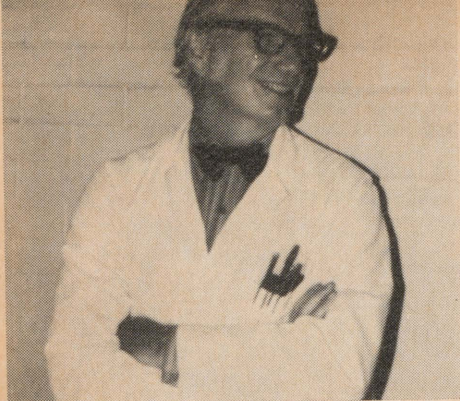
Related agricultural studies are being carried out on grass row crops as a farm waste disposal site, and on the effect of row cropping on insect populations.

and nature of water pollution in relation to modern agricultural practices.

r. Clark Blackwood was appointed project Co-ordinator, and the project as set up involves the Macdonald College Farm, plus the departments of Agriculture, Agricultural Engineering, Agronomy, Agricultural Chemistry, Agricultural Physics, Entomology, Microbiology, and Soil Science. A total of people are directly involved, plus many others in supporting roles. The project name of "Intensive Agriculture and Water Pollution," became IAWP for short, and was soon revised to the more pronounceable IWAP. April 1, 1971, was selected as

Day 1 of the project, and it is planned to run until March 31, 1972, to get a full annual cycle.

The overall project plan is to determine the alteration in chemical and physical properties of a receiving water body as a result of intensive agricultural practices carried out on the land of the contributing watershed, and to determine the biological effects of these alterations. Two small established ponds in the College Farm area (see cover), form the basis of the project. The watersheds for these ponds are separated by ensuring that surface and tile drainage systems feed from given ground areas predictably into their respective ponds.



Dr. A. C. Blackwood

(Shown on these pages are only some of the many people involved in this study.)

Grass Row Crop Study

This section of the project is an investigation into the feasibility of using grass row crops as farm waste disposal sites. The relative response of seven species of grass to liquid wastes applied at different frequency will be established.

In addition, this section of the project will provide information on the effect of high levels of liquid waste on the soil organic matter and nutrient status, and thus on the composition of drainage water. Pig manure is being used as the liquid waste, with direct incorporation being used for odour control.

Soil sampling was carried out before seeding and will be repeated at the end of the growing season to determine changes in nutrient profiles.

Agronomic evaluation will include dry matter yields, nutritive value studies, and determinations of nutrient recovery by the herbage.

Insects Attacking Grass Varieties

There is a strong possibility that growing grass as a row crop will alter the microclimate and host plant, so as to influence the population density and species composition of potential insect pests. If this is so, there may well be a requirement for chemical control, with the attendant danger of insecticide pollution.

The nutrient balance, which it is hoped can be developed from the



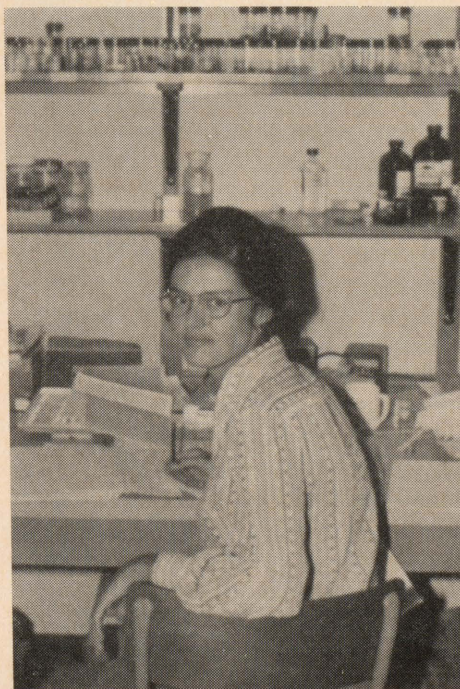
Dr. R. Knowles

above row crop study and other sections of the project, must take into account the nutrients carried off the plots by insects.

Hopefully then, this section of the project will answer the questions of what effect row cropping has on the insect populations of a field, and what proportion of the available nutrients gets removed from the plot by dispersing insects.

Nutrient Budget

This section of the project is vital, and has as its objective the determination of the budgets for nitrogen, phosphorous, potassium and other plant nutrients. It is hoped that it will be possible to ascertain the nutrients in the soil at the start of the season; additions by fertilizer, rainfall and absorption



Dr. F. E. A. Ali Khan



Dr. A. F. MacKenzie

from the air; removal by sub-soil drainage water and crops; and how much remains at the end of the season.

The accomplishment of this objective involves a program of continuous sampling and analysis of soil, drainage water, lake water, plants, harvested grain, and manure. In all, over 500 chemical analyses will be required.

Pesticide Run-off Study

Pesticide contamination of soil and surface waters is causing considerable concern among ecologists. This section of the project attempts to determine the polluting effect of normal pesticide use under practical field conditions.

The term pesticide covers insecticides, fungicides and herbicides, and in this section of the project, all three are considered. The seed grain corn used was pretreated with Captan and Methoxychoor (fungicide and insecticide); treated with Vitaflo D. B. (fungicide) at time of seeding; and will be treated with Atrazine and Gardona (herbicide and insecticide) during the growing season.

Gas chromatography analysis is being used to determine levels of the pesticides and of any possible degradation products in seed, plants, soil and water.

Study of Microbiological Activities in Water

The microscopic plants and animals which inhabit land and aquatic environments are the basis of life in these environments. For this reason alone, a study of the



Dr. F. O. Morrison

microbiology of our small lakes was required.

Microbiological activities in a water body are excellent and rapid indicators of the state of health of that water body. For example, the presence of *Escherichia coli* is an indicator of fecal pollution, because this organism is an inhabitable inhabitant of the gut communities of warm blooded animals. Also, because the generation time for micro-organisms is very short, sometimes as little as 20 minutes, any deleterious additions to the environment show an effect very quickly.

The sampling program underway for this section of the project will lead to an assessment of the numbers of important groups of bacteria, yeasts and actinomycetes to be found in tile drainage water and in the body of the lake.

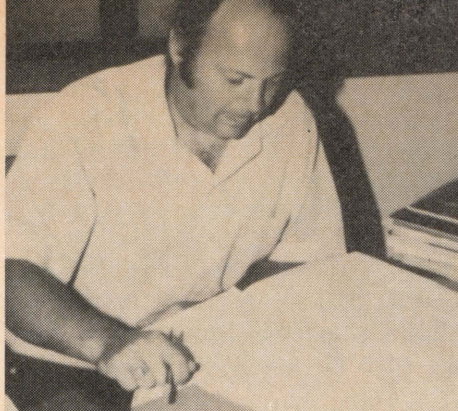
Coliform counts, and *E. coli* counts are being conducted on all samples. Special assays are being conducted for anaerobes, sulfur oxidizers, methane bacteria and nitrifying bacteria.

As a result of this continuous and intensive program, it should be possible to monitor the state of the water system, and to obtain rapid assessment of the results of agricultural practices.

Laboratory Scale Nitrogen Budget

Under field conditions, establishment of an accurate nitrogen balance is almost impossible.

The insect and row crop study described above gave an indication how complex one aspect of



Dr. J. R. Bider

this problem can be. Consider the variations in uptake from the atmosphere which can result from changes in temperature, humidity, rainfall, wind and other climatic variations. Lightning is known to have a local effect as well. Despite the most painstaking research, it is unlikely that all sources of nitrogen supply or loss can be identified and measured.

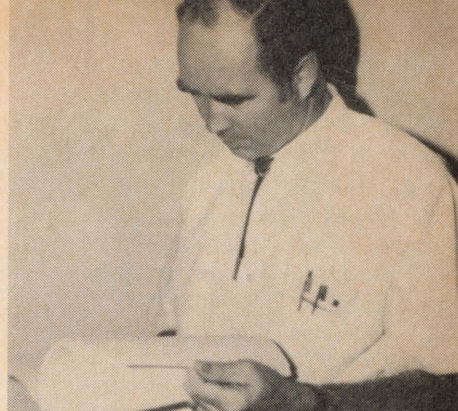
It was therefore decided that an accurate nitrogen balance would be conducted under laboratory conditions where these variables could be eliminated or controlled.

The technique involved uses actual samples of the soil from the field plots under study, and subjects these samples to treatments designed to simulate those applied in the field. Animal wastes and commercial fertilizers are added at the same time and concentrations as on the field plots and the samples are continuously perfused. Determinations of ammonium nitrogen and nitrate nitrogen are made on the perfusate.

A measure of denitrification will be carried out by incubating soil samples in a closed system where the atmosphere is replaced by a nitrogen free gas mixture. Thus any nitrogen released can be measured by gas chromatography. Attempts will also be made to estimate actual and potential rates of nitrogen fixation in water samples by blue green algae.

Pond Fauna Study

Pond life is a fascinating study. An apparently limitless variety of inhabitants live out their lives in the communities of the shore regions, pond surfaces, pond bot-



Dr. J. R. Ogilvie

toms and the main water bodies of the pond. The whole structure of these communities is interwoven, interdependent, and extremely sensitive to the pressure of external events.

Any investigation of water pollution must consider the biological effects. In our case, it was expected that the differences in agricultural practices being carried out on the two watershed areas would result in differences in chemical and physical properties of the pond waters. It was also anticipated that there would be resultant differences in the fauna of the two ponds.

A program of sampling and identification of the animal life in the water communities has been established and will hopefully indicate the nature and cause of these differences.

Pond Phytoplankton Study

Closely related to Pond Fauna, but on a different scale, is the study of Pond Phytoplankton. Plankton are minute organisms which live in the open part of water bodies. Phytoplankton are the plant portion of the plankton, and usually contain chlorophyll. Thus, they have the unique ability to utilize the energy of the sun. Solar energy plus dissolved carbon dioxide becomes plankton cell material, with oxygen produced as a by-product. The importance of phytoplankton can hardly be overstated, as they are the first step in the aquatic food chain, plus being the source of much of the oxygen which is required by other aquatic plants and animals.

The specific aim of this portion of the project is to determine the effect on pond phytoplankton of any alteration in physical and chemical properties of the pond waters due to agricultural practices. The sampling and identification program now underway will hopefully provide answers to this problem.

Soil Fauna Study

Nutrients and toxins constitute the main fresh water pollutants which originate from farms. The amounts which pass into water are partly determined by the microbial populations in soil through degradation, immobilization, and mineralization.

Most of the soil fauna depend on microbes or organic matter infected with microbes as a source of food. The fauna also has a close relationship with microbes due to their habit of distributing spores as they move about in the soil. Accordingly, there is a close and specific relationship between the microbial population of a soil and the soil fauna. Because the fauna are larger and easier to identify than the soil microbes, the advantages of using soil fauna as indicators of soil conditions are obvious.

This portion of the program consists of a continuous survey of soil arthropod fauna, sampling and identification to determine the variation in this population with soil conditions.

(Note: Arthropods include over 80 per cent of all known species of the animal kingdom. They are invertebrates and are characterized by their exo skeletons. Included are insects, spiders, ticks, mites, crustaceans, centipides, millipedes and some smaller groups. In the case of our soil fauna study, the arthropods which concern us are the Acarina (mites). Soil mites range in size from one millimeter downwards.)

Service and Auxiliary Functions

The foregoing descriptions of the activities of the various sections make no mention of the service functions provided to these sections by specific Macdonald College Departments.

The Department of Agricultural Engineering is monitoring and reporting surface and sub-surface water flows, lake temperatures and dissolved oxygen levels. In addition, they provide project mapping and a project construction group.

Agricultural Physics are providing rainfall measurement stations and supervising collection of rainfall samples for analysis.

Soil Science are operating a central chemical analysis laboratory to provide analyses of soil, water, plant and manure samples for all project sections as required.

Project Administration

The organization and administration of an interdisciplinary project such as this one involves more than the usual administrative problems. With the best intentions in the world, it is natural for each scientist to regard his section activities as paramount, and even minor problems such as who uses the project boat on Tuesday morning can assume major proportions. For this reason, all activities around the project area are coordinated (but not directed) by a Field Coordinator. His functions are simply the coordination of field and administrative activities, so that the mainstream of scientific efforts can proceed with minimum interference.

Personnel directly involved with the project are:

Coordinator: Dr. A.C. Blackwood
Field Coordinator: J.D. Salloum
Section Leaders: Dr. F.E.A. Ali Khan, Dr. B.E. Baker, Dr. A.C. Blackwood, Dr. M.E. Goldstein, Dr. S.B. Hill, Dr. R. Knowles, Dr. A.F. MacKenzie, Dr. F.O. Morrison, Dr. R.K. Stewart.
Staff Advisers: Dr. J.R. Bider, Prof. R.S. Broughton, R. Dallenbach, Dr. R.H. Douglas, Dr. D.K. Kevan, Dr. J.R. Ogilvie, Dr. B.P. Warkentin.
Graduate Students: P. Alexander, B. Boylan, W. Boyle, B.A. Gottlieb, J. Osborne, N. Thomas.
Technicians: S. Baker, P. Bell, H. Hooper, D. Kennedy, C. Lovegrove, D. Scott, L. van Guelpen.

Another interesting little problem which cropped up early in the project is that of units of measurement. Most of the disciplines

system, but land measurement, crop yields and mapping are commonly in the British system. On a joint project, where each group must be able to use data from other groups and relate that data to their own results, it is absolutely essential that a uniform system of measurement be adopted. Accordingly, it was decided that all measurements would be in the metric system. The readiness with which this decision was adopted by all participants is a measure of the spirit of cooperation which characterizes the whole project. A small thing perhaps, but watching (and listening) while a field crop expert tries to rethink a yield in kilograms per hectare into bushels per acre so he can relate it to his past experience makes one realize some of the problems of interdisciplinary project work.

Summary

The IWAP project should provide some insight as to the effects of modern intensive agricultural practices on our environment. The subject is a large one, and the scope of the problem is vast, but we must begin to cope with it. The project is such a beginning.

No one expects that all the answers will come out of this summer's work, but we should be able to arrive at some tentative conclusions. Hopefully, further avenues of investigation will open up, and further questions arise, so the work of future years can be more solidly based.

Perhaps the greatest benefit which can be expected to come out of IWAP '71 is the experience in group research and interdisciplinary investigation which will be gained by the participants. Most of the pollution problems now concerning us have arisen because some discovery has been rushed into service without consideration of the possible consequences in other spheres. Hopefully, from this project, and others to follow it, we will gain an increased realization of the consequences of our actions on our neighbours, our environment and on our fellowman.

J.D. Salloum
Graduate Student,
Dept. of Agricultural Engineering

Quebec's Nitrogen Cycle

Nitrogen is the key fertilizer element in crop production in Quebec.

This key opens the grainery door yielding an abundance that we take for granted in present agriculture.

On the other hand, nitrogen may be a key to some problems with our environment. Nitrogen in our well water as nitrate can cause problems with livestock and humans. Nitrogen in our rivers and lakes can cause lush growth of undesirable as well as desirable organisms. The fact that a well fertilized lake produces more fish may not compensate for the fact that well fertilized lakes are generally less desirable for other forms of recreation.

Environmentalists look at large applications of nitrogen fertilizers on farms and feel that such applications pose a possibility for pollution. In fact what they may be seeing is the tip of the iceberg. Hidden from sight is the fact that there is far more nitrogen being added to our soils from animal residues, rainfall, legumes and through purchased feed brought in from outside of the province than is being applied as fertilizer.

Agriculture in our province involves a number of nutrient cycles. Nutrients such as nitrogen travel from the soil to the plant to the animals and in the animal wastes back to the soil. Because of fixation of nitrogen by legumes, or by microorganisms in the soil, more inputs of nitrogen go into our soil storehouse. Outputs to balance off these inputs include nutrient removal in milk, meat and eggs. Further, nitrate-nitrogen is lost through leaching to groundwater and denitrification of soil nitrogen causes its return to the atmosphere. Can we use gains and losses in the

nutrient cycle to see if we are overloading our soil-plant-animal environment with nutrients such as nitrogen?

Let's look at Quebec. Fertilizer inputs in 1966-67 brought approximately 13,736 tons of nitrogen into the province. Feed purchases brought in 7,630 tons, if we assume that one-half of the feeds moved to eastern Canada from western Canada came to Quebec.

If we assume that about five pounds per acre of nitrogen fell in rain on our 7,600,000 more or less improved acres, we received approximately 17,500 tons of nitrogen. Finally, legume and microbial nitrogen fixation, which is difficult to estimate, may have added between 5,000 and 8,000 tons of nitrogen to our cycle. Free living microbes, on the other hand, may add as much as 50 pounds of nitrogen per acre. However, as the nitrogen levels in the soil increase, their nitrogen fixation may decrease. Up to 75,000 tons of nitrogen could be added this way, an enormous amount. Egg imports may amount to half our consumption, or about 30 tons of nitrogen per year, an insignificant amount.

In any event, these are estimates of the total nitrogen inputs of about 120,000 tons of nitrogen into Quebec agriculture. There are a lot of "ifs" in that number, however.

What about removals? About 250,000 tons of milk are marketed regularly. This should contain about 1,315 tons of nitrogen. We have for sale about 110,000 cattle, 380,000 calves, 2,500,000 hogs and 35,000 sheep and lambs annually.

Using data from feed and nutrition texts, this should amount to 7,314 tons of nitrogen in meat.

Regrettably these nitrogen levels in milk and meat are probably losses because most of the nitrogen is used for human nutrition. The nitrogen ends up in our sewers, in our rivers, and in our waterways, completely bypassing the soil, its normal resting place. Other losses include leaching losses which we cannot determine at this stage.

It has been estimated that about a 16- to 24-inch water surplus occurs in Quebec, that is an excess of precipitation over evaporation. Some of this excess water will leach through the soil, carrying with it nitrogen, and if we end up with an average nitrate level of about two to three ppm in the leachate, this could amount to 32,000 tons or more. Denitrification or loss of nitrogen to the atmosphere is another possibility for loss that could account for 20,000 tons of nitrogen per year. Again this is a very rough estimate that does not take into account variabilities in nitrogen levels, in soil drainage, etc. Removals then could amount to about 35 to 40,000 tons.

The difference between removals and additions amount to a 40 to 60,000 tons annual gain. Thus, by using these values the nitrogen cycle in Quebec appears to be a surplus region, i.e. there is more nitrogen moving in than is moving out. Further, the soil storehouse of organic matter contains from 3,000 to 8,000 pounds of nitrogen per acre, and much of this nitrogen is actively involved in the nitrogen cycle. Is this storehouse being increased? Or are our estimates of losses too low?

Does this type of calculation appear useful? On a province-wide basis, probably not. We just don't have the data for such a large variable area. But can we use this method to solve problems on individual farms? Every farm has its own unique situation, unique soil, unique animal population, unique feeding program and unique fertilizer program. Thus although there may or may not be a problem with pollution of rivers and lakes with nitrate-nitrogen from the agricultural nutrient cycle in Quebec, individual farms may present a different picture.

For example, what is going on at the Macdonald College Farm? Here we have a very intensively-farmed dairy unit which also contains beef animals, sheep and hogs. Is there anything useful we can find out by calculating the nitrogen cycle on a smaller area? Perhaps here our data will be more accurate, leading to better estimates of gains and losses.

There is a population of animals that consume about 30,000 pounds of imported nitrogen yearly in feed brought in from outside the farm. This is feed in excess of that grown on the farm and thus is a net import. In addition there is 1,600 pounds of nitrogen that comes in as fertilizer and approximately 1,500 pounds of nitrogen in the rain fall, if we take five pounds per acre over 500 acres. In addition there is a certain acreage of legumes and if we assume about 40 to 50 pounds of nitrogen per acre as a net gain, we can estimate increases of about 5,000 pounds of nitrogen brought onto the farm from legumes. Losses include the sale of milk and meat. Milk amounts to about 7,000 pounds of nitrogen, meat about 5,200 pounds of nitrogen annually. Other losses could be leaching and denitrification. From some of the results of analysis of tile drain water on the farm, we suspect a loss of about 2,400 pounds nitrogen from the 200 out of 500 intensively used acres on the farm. Denitrification, i.e. the loss of nitrogen to the atmosphere due to microbial activity? This is very difficult to guess. We are suggesting that on the 200 acres, perhaps 40 pounds nitrogen could be lost per year per acre, amounting to about 8,000 pounds.

Thus our gains amount to about 52,500 pounds of nitrogen. Our removals amount to about 22,000 pounds of nitrogen. Apparently, there is still 30,000 pounds of nitrogen that is either accumulating on the farm or is being lost and we do not know about it.

What about the animal waste disposal? Are we losing nitrogen in this operation? About 56,000 to 62,000 pounds of nitrogen are produced annually in the wastes of the animals on the farm. Normally this is not an export or an import of nitrogen. If, however, approximately one half of the nitrogen goes back to the soil and the rest is lost for various reasons, then our nitrogen cycle is balanced. If our losses are not that high in handling our animal wastes, if we become more efficient in the use of animal wastes, then the nitrogen cycle will have to balance either by increasing soil organic matter or by increasing leaching losses and denitrification. Unfortunately we have no data on build-up of soil organic matter. However, results from other areas indicate that organic matter does not increase in soils. This is probably because of cultivation, aeration and resultant organic matter oxidation.

What conclusion can we draw from this type of work? The first conclusion, I think, is that an intensively managed dairy farm in Quebec has an excess of nitrogen inputs over outputs. This excess is going to show up in leaching losses and denitrification. Can this excess be reduced? Certainly the removal of nitrates to ground-water and our water ways is not desirable from an environmental point of view. We must decrease our imports or increase our losses in ways other than leaching of nitrate nitrogen.

There are probably three places where inputs can be reduced. One is in reduced purchase of feeds. More homegrown feed could be used and this involves perhaps a more efficient fertilization cropping program. If more homegrown feed is to be used, then can we logically expect to cut back on our fertilizer use? We may have to be more careful as to where we place our fertilizer. Fertilizer should be placed where maximum crop growth can occur with minimum leaching. Thus

a second solution may be less nitrogen on our sandy soils and more nitrogen on our clay soils. Third, legumes may have to be replaced by high nitrogen using crops, such as corn or grass. Nitrogen can be applied to legumes provided there is no grass to compete and choke out the legumes. This is not an easy solution to the legume problem and it appears their use may be limited unless other ways of decreasing nitrogen inputs are found. Further, denitrification of the nitrogen in animal wastes could be enhanced. It is difficult to know the best methods of achieving this loss but some type of anaerobic manure handling system may be needed. However, it seems ironic that we are paying 12 cents a pound for nitrogen in fertilizer that we are then trying to get rid of in our manure handling system. It seems either feed or fertilizer purchases will have to be reduced, with an increase in manure use efficiency.

The farm at Macdonald College may have an ideal answer. Crop acreage is going to expand to include the Seed Farm fields. Thus more feed can be grown, less purchased. Also this increased acreage will be available for animal wastes, reducing the chance of overloading the soil in any one place. It will be interesting to see how this larger land base will effect our calculations a few years from now. Such a solution has to be the answer for many of our high producing animal operations in Quebec.

In summary, Quebec as a province may be a nitrogen surplus region but data are too limited to apply to such a large agricultural region. Individual farms that are intensively managed with efficient manure handling systems may be nitrogen surplus regions. This nitrogen surplus can best be reduced by increasing the use of fertilizers on the better crop producing lands and reducing fertilizer use on poorer soils, reduction in purchases of feed, reduction in nitrogen fixation by reduction of legumes and an increase in denitrification in manure handling systems. These factors may require a larger land base on our farms to be fully effective.

Prof. A.F. MacKenzie,
Chairman,
Dept. of Soil Science.

The Family

Farm

Published in the interests
of the farmers of the province
by the Quebec Department of
Agriculture and Colonization

HEALTH OF ANIMALS

Special Provision For Disadvantaged Regions

Withstanding the introduction
contributory animal health
insurance, some parts of the
province, owing to their remote-
ness or sparse livestock populations,
are unattractive to veterinary
practitioners, who naturally tend
to choose more promising centres.
In order to help farmers who
find themselves deprived of
essential service, the Department
of Agriculture and Colonization
maintains a program designed to
encourage qualified veterinarians
to be willing to practice in
these areas.

Designated areas: This program
applies to the following counties
of the Province of Quebec:
Abitibi-East, Abitibi-West, Bona-
venture, Gaspé-North, Gaspé South,
Magdalen Islands,
Matane, Matapédia, Ri-
verside, Rouyn-Noranda, Témisca-
boue, Témiscouata, and specified
municipalities in Frontenac.

Qualifications and conditions:

Qualifications: 1) must be a
graduate of the Veterinary College
of the Province of Quebec;
2) shall undertake to open and
maintain an office at a place to
be designated by the veterinary
director; 3) must sign an agreement
regarding his undertakings; 4) must
specifically undertake to provide
adequate Veterinary Service
at the standard rates in effect
in other parts of Quebec.

Benefits of the program: The re-
sponsible authorities of the
Department agree to pay such
veterinarians a fee of \$5,000. in
12 consecutive, equal instalments.

Compensation To Farmers Suffering Losses Of Cattle Or Sheep

In order to supplement the program
of contributory animal health
insurance, the Department is also
continuing the assistance measure
already in force for the benefit
of farmers who find themselves
in a precarious situation owing
to considerable losses of cattle
or sheep.

Benefits: 1) Purchase and paying
for young cattle or sheep of the
best possible quality following
careful selection by a livestock
specialist and their acceptance
by the farmer; 2) Health inspection
by the regional Veterinary Service
and inoculation against shipping

fever if necessary. The Department
of Agriculture and Colonization
does not, however, accept any
responsibility for any subsequent
pathological conditions.

The Department's assistance is subject to the following conditions:

1) The compensation applies to
losses from acute diseases, acute
poisoning or specified accidents
on the farm: lightning, fire,
accidental electrocution;

2) Per cent losses for entitlement
to compensation are as shown
in Table I:

No compensation will be paid
in the case of a herd or flock of
fewer than five animal units.

3) The number of animal units
in the herd or flock is reckoned
in Table II:

In the case of losses of sheep
due to attacks by wild animals,
the percent loss required for
entitlement to compensation is
only 10%.

Table I

40%	in the case of a herd or flock of 5 to 10 animal units
35%	in the case of a herd or flock of 11 to 15 animal units
30%	in the case of a herd or flock of 16 to 25 animal units
25%	in the case of a herd or flock of 26 to 50 animal units
20%	in the case of a herd or flock of more than 50 animal units

Table II

CATTLE:

Mature cows, in-calf heifers, mature bulls	1 unit
Open heifers and two-year-old steers	1/2 unit
Yearling cattle	1/3 unit
Calves aged 6 to 12 months (inclusive)	1/4 unit
Calves under six months old	1/6 unit

SHEEP:

Mature ewes and young ones in lamb	1 unit
Mature rams	1 unit
Lambs aged 6 months to a year	1/2 unit
Lambs under 6 months old	1/4 unit

UNIT VALUE

4) This assistance also applies to bovine sterility of an infectious or nutritional origin, on the following conditions: a) the nature of the infection or nutritional deficiency must be clearly established by the Department's laboratories; b) the cause of the trouble either infectious or nutritional must not endanger the health of the replacements in any way; c) the percent losses needed to qualify for compensation in this case are double those mentioned in article 2.

5) Diagnosis of the disease, poisoning, or accident must be clearly established by the Veterinary Service of the Department of Agriculture and Colonization or its representative.

6) The claimant must make a payment of \$100 **per head of cattle** to be replaced and \$15 per sheep to be replaced, by means of a certified cheque payable to the Quebec Minister of Finance.

7) A farmer may obtain the Department's aid to buy not more than **10 head of cattle and 25 sheep** for replacement purposes and the total grant may not exceed \$400 per head of cattle or \$35 per sheep.

8) Chronic diseases and diseases for which the Department of Agriculture and Colonization already provides preventive vaccination, diseases named by the Department of Agriculture of Canada and accidental causes other than those specified are not covered by the policy.

9) Owners of livestock who have not called in their veterinarian or are found to have been negligent in the care of their flocks or herds or in applying elementary principles of hygiene will be refused the Department's assistance.

10) The Department of Agriculture and Colonization will demand restitution if the application for assistance is shown to contain false statements.

Review Of A Joint Program With The Canada Department Of Agriculture

In view of the losses sometimes suffered by farmers owing to the occurrence of rabies among their animals and of the resulting danger to humans, a joint program has been made the subject of an agreement between the Quebec Department of Agriculture and Colonization and the Canada Department of Agriculture.

WHEREAS rabies can cause serious losses among the cattle, horses, sheep, pigs and goats of the farmers of the province, especially in event of an epidemic;

WHEREAS, under the regulations enacted by Order in Council No. 1302 on the 14th of July 1966, the Minister of Agriculture of Canada is authorized to reimburse the province to the extent of 40 percent of the sum paid by the province to compensate owners of animals which die of rabies, such compensation not to exceed:

a) \$120 for a bovine animal,
b) \$100 for a horse, c) \$40 for

a sheep, d) \$40 for a pig,
e) \$40 for a goat;

WHEREAS there is good reason to protect the farmers of the Province against the ravages of this disease; The undersigned recommends and agrees:

1) That, starting on April 1, 1966, compensation be paid by the Department of Agriculture and Colonization to the owner of every farm animal which dies of rabies;

2) That the amount of compensation shall represent the value of the animal, with a limit of:

a) \$300 for a bovine animal,
b) \$250 for a horse, c) \$100 for a sheep, d) \$100 for a pig,
e) \$100 for a goat;

3) That no compensation shall be paid unless the Department of Agriculture and Colonization receives a certificate in duplicate signed by a veterinary inspector appointed under the Animal Contagious Diseases Act (R. S. C. 1952, Chapter 9) attesting that the animal died from rabies and setting a value on it.

Promotion Of Preventive Hygiene

CATTLE:

Preventive Vaccination Against Blackleg:

The Department of Agriculture and Colonization recommends that all young cattle in districts where blackleg is prevalent be vaccinated against the disease. The purpose of the vaccination is to protect

lives against blackleg and to prevent renewed contamination of the soil by bodies of animals which have died of the disease. The terms and conditions of this assistance policy are as follows:

Blackleg infected districts: This term includes not only those farms or feedlots where the disease has been found but also all farms bordering on the infected premises situated along a watercourse draining any area contaminated by the bodies of animals which have died of the disease.

Calves reared on farms where blackleg has been identified or suspected on farms near sources of infection should therefore be protected against the disease.

Age of cattle to be vaccinated: Animals between three and 30 months old may be immunized. This does not authorize immunization of animals in any of the three following categories: a) Calves less than three months old; b) Animals over 30 months old; c) Any animal which has already been vaccinated with the same vaccine.

Vaccination period: Subsidized blackleg vaccination is authorized during the 12 months of the year.

Charge for vaccination: The owner will be charged 10 cents for each animal vaccinated. The department undertakes to provide the vaccine and pay the veterinarian who administers it.

To ensure best possible results from systematic mass vaccination, each veterinarian should follow the procedure described herewith:

a) Send for the necessary number of report forms and the quantity of vaccine he expects to use;

b) Proceed with the work without waiting for further authorization, but in no case treat any animal outside the district of his regular private practice;

c) Vaccinate animals which are at least three months old but not more than 2½ years old and have never been vaccinated against blackleg;

d) Vaccinate only young cattle which are being raised and only in districts where blackleg has been observed at least once during the past three or four years;

e) Collect 10 cents for each animal vaccinated and then send in a receipt signed by himself and the owner of the animals or his representative;

f) Report on his work to the Service, sending with the report a money order or cheque, payable to the Minister of Finance, for all his collections.

Any farmer wishing to take advantage of this offer of vaccination at the Department's expense must:

a) Apply directly to a veterinary practitioner and not to the Department of Agriculture and Colonization. If the veterinarian is not willing to undertake the work, the request should be made through the Department's regional agricultural office;

b) Several days at least before the veterinarian's visit, let him know about how many animals are to be vaccinated;

c) On the day and, if necessary, at the time set for the vaccination, keep his young cattle in the barn and fasten them or otherwise immobilize them to the veterinarian's satisfaction;

d) Consult with his neighbours, so that if possible the animals of all of them can be vaccinated at the same time and during one session;

e) Bodies of animals that have died of blackleg must not be skinned or left lying in the fields; they must be burned or buried deeply covered with quicklime. It is important to break the cycle of development of this disease by preventing continuous re-infection of the soil by infected carcasses.

Anti-Brucellosis Vaccination

(Federal-provincial agreement)

Farmers may apply to have their calves immunized with vaccine of clone 19 in conformity with the provisions of the federal-provincial agreement.

For this purpose, the farmer must undertake to:

a) Have his young cattle vaccinated at the age already stipulated or at an age which the veterinary director general may decide in future;

b) Retain the services of a veterinarian legally qualified to practice within the province;

c) Facilitate the work of vac-

cination by rounding up, sorting out, and immobilizing the animals he is entitled to have vaccinated;

d) Permit and facilitate the marking of the vaccinated animals by means of a special tag in the right ear of calves or by markings assigned to each animal by the Canadian National Livestock Records;

e) Not to allow any antibrucellosis vaccine to be used on his cattle except that which will be supplied by the Canada Department of Agriculture;

f) To assume responsibility for the expenses incurred for these vaccinations and for paying the veterinarians who perform them;

g) Not to claim any compensation for accidents, diseases, harm or supposed harm which he may attribute to or connect with the veterinarian's operations, including the administration of the vaccine;

h) Not to add any bovine animal to his herd except for animals which satisfy the provisions of paragraphs a, b, or c of section 156e, Part XIII-A of the Animal Contagious Disease Act (R.S.C. 1952, c. 9 as amended by 1953-54, c. 12 and 1958, c. 11).

The farmer recognizes that: a) He has been informed that vaccination alone is not enough to ensure effective protection against brucellosis; b) He is not entitled to any vaccination certificate if the treatment is administered to an animal outside the stipulated age-range or with vaccine whose effectiveness is not recognized,

or if the identity or age of the animals has not been accurately given.

MINK

Preventive Vaccination Against Distemper, Botulism, and Infectious Enteritis:

The purpose of these vaccinations is to: a) Prevent outbreaks of distemper, botulism, and infectious virus enteritis among mink; b) Make available to mink breeders, for a small charge, the vaccines needed for the prevention of these three diseases, which can cause considerable losses in their herds; c) Provide them with the services of veterinarians to administer the vaccines.

Breeder's responsibilities:

a) A charge of three cents per dose of vaccine must be paid by mink breeders wishing to make use of preventive vaccination against distemper — single vaccine;

b) A charge of four cents per dose of vaccine must be paid by mink breeders wishing to make use of preventive vaccination against botulism and infectious enteritis — combined vaccine;

c) If a breeder wishes to make use of vaccination against all three diseases he must pay a charge of seven cents per animal;

d) The breeder must provide the assistance needed to administer the vaccine;

e) In order to make this assistance policy easier to carry out, the vaccinations must be performed

at the following times: 1. Young mink: from the 1st of July to the 15th of September (9 to 10 weeks of age); 2. Adults: from the 1st of December to the 15th of February (at least one month before mating);

f) The cost of the vaccines and the veterinarian's fees will be paid by the Department.

The Department will not be responsible in any way for deaths, losses, accidents or damages following upon vaccinations.

Veterinarian's responsibilities:

a) At a mink breeder's request you may agree to vaccinate his animals against distemper, or against botulism and infectious enteritis, or against all three diseases;

b) The amount of the charges collected by the veterinarian must be sent by cheque or money order to the Quebec Minister of Finance.

Responsibilities of the Veterinary Service:

a) The Veterinary Service will supply on request, the vaccine against distemper (single vaccine), the vaccine against botulism and infectious enteritis (combined vaccine), or both vaccines if required;

b) The veterinarian's fees (not including travelling expenses) will be repaid at the following rates: eight cents per animal vaccinated against distemper; eight cents per animal vaccinated against botulism and infectious enteritis; 10 cents per animal vaccinated against all three diseases.

the authorities of the Department request the cooperation of veterinarians to ensure the effective application of this program.

CAREFUL PREPARATION FOR WINTERING REQUIRED FOR SUCCESSFUL BEEKEEPING

Agriculture specialists in the Quebec department of Agriculture and Colonization's Research and Education service remind Quebec beekeepers that careful preparations for wintering the colonies is still one of the best ways to ensure success with bees. The fact that losses in our colonies resulting from neglect in this matter are very heavy — about 10 to 20 percent — shows the need for beekeepers to follow scrupulously the recommendations made to them.

The last big inspection of the colony should have been made during the last two weeks in August or at the very beginning of September to see if every hive has a good queen and enough bees to completely cover six frames of brood. A hive carefully prepared for wintering has a good queen, at least 20,000 young bees born in September and early October and enough food to ensure survival till the following May. Every strong colony wintered indoors may need up to 50 pounds of honey and pollen, and twice as much if they are wintered outdoors.

To avoid setbacks and heavy losses in winter, nourishment of good quality (white honey, refined sugar syrup) is strongly recommended for the bees. Feeding with the sugar should be done in September. The chief diseases

of bees (nosema, and American and European foulbrood) can be prevented by mixing drugs with the syrup in accordance with the agricultural department's recommendations.

Conditions for good indoor wintering are briefly as follows: complete darkness; a temperature of 40 to 48°F; relative humidity averaging 50-75 percent; freedom from vermin, rats and mice; removal of strong-smelling vegetables such as cabbages and turnips. Reducers must also be removed from hive entrances and good ventilation ensured by seeing that the hives are raised six inches or more from the ground, depending on the amount of damp coming from the floor where they are resting. The hives should be moved into the cellar between the first and 20th of November, i.e. before the first sizeable snowfalls.

A survey of losses suffered by Quebec beekeepers shows that outdoor wintering should not be resorted to except from dire necessity e.g. when there is no suitable place for the bees indoors.

Losses during outdoor wintering are in fact roughly one third higher. In case of necessity, the following recommendations for outdoor wintering should be observed:

The hives should be set 12 to 15 inches above the ground in a place sheltered from prevailing winds. In October they should be enclosed in insulating material (mineral wool or wood shavings for instance) three inches thick on the sides and underneath the hive and six inches on top of it and then placed in a wooden casing.

A hole in the top of the hive will ensure good ventilation. In addition, to prevent the bees from suffocating when the snow is covered by a layer of ice, it is recommended that stakes sufficiently long to overtop the snow be placed near the hives to promote good circulation of air.

The only outer casing recommended by the department's research workers is a wooden one. Plans for it may be obtained from the Department of Agriculture and Colonization's Research and Education service or from its Farm Buildings division.

Members of Stallion Enrolment Board Appointed

The minister of Agriculture and Colonization, Mr. Normand Toupin, recently announced the appointment of the members of the Stallion Enrolment Board, a body which is concerned with classifying Quebec stallions. The members are Dr. Jean-Marie Dionne of Montmagny, president; Mr. Henri Couture of St-Prosper in Champlain county, first vice-president; Mr. Laurent Gauthier of St-Thomas-d'Aquin, St-Hyacinthe county, second vice-president; and Mr. François Boulais of St-Hyacinthe, secretary.

In making the appointments, Mr. Toupin recalled the principal provincial regulations that owners of stallions should know about and he added that interested persons who are not already familiar with the pertinent legislation may contact the committee by writing to Mr. François Boulais, Secretary, P.O. Box 130, St-Hyacinthe, P.Q.



Welcome Home! To our Provincial Q.W.I. President, Mrs. V. R. Beattie, all other delegates and accredited visitors to the ACWW Conference in Oslo. We look forward to hearing from you in the near future.

Delegates to the Q.W.I. Diamond Jubilee Convention in June have been faithfully reporting back to the branches.

Lennoxville presented a Life Membership to Mrs. Ralph Mosher who has been a member of the Q.W.I. since 1917. Congratulations to Mrs. Mosher and also to another member of this branch who recently celebrated her 98th birthday. Is this our eldest member of the Q.W.I.?

New members are reported at **Spooner Pond, Aylmer East** and **Frontier**. Welcome.

Arm chair travel was enjoyed at **Aubrey-Riverfield** with slides of a trip to Europe, and at **Howick** in the telling of a trip to the British Isles.

Huntingdon members were reminded to watch the progress of the Educational Bill being proposed in Quebec and asked to be awake to clauses affecting their children's education.

Waterloo-Warden forwarded a petition to the local authorities protesting the scrap car dumps along the highways and requested that action be taken to have them outlawed.

A future W. I. member for **Wright**? A lively discussion was held on the use of drugs, especially on the pros and cons of legalizing marijuana. Miss Susan

Derby, nine years old, told the members about the film and discussion they had with their health nurse at the Queen Elizabeth School in Kazabazua.

Twin calves (a boy and a girl) were born on the farm of the Agriculture Convener of **Barachois**.

Though always keeping her membership in the **Ascot W. I.**, Mrs. Thomas Billings had been unable to attend the meetings for many years until this summer when the branch came to the Grace Christian Home in Huntingville where she now lives. After the business meeting the Ascot ladies joined the residents for a sing song and then served a chicken salad tea to all. The following month, **Lennoxville W. I.** served a tea at the Grace Christian Home and presented a program of piano solos, hymn singing and a play by three little girls.

Senior members of **Wakeham W. I.** won the admiration of their branch in the marvellous way they could still perfectly recite poems learned in childhood such as "I Once Had a Beautiful Doll," "How Would You Like to Go Up in a Swing?," "Two Little Kittens," "Jack in the Pulpit," and several others. At a beach picnic the ladies enjoyed games, races and dug clams.

York reports a "Come as you are" meeting. The hostess calls the members by phone anytime during the month and whatever the member is wearing when she answers the phone she must wear at the next meeting. Incidentally, some arrived in pyjamas, housecoats, shorts, slacks and house-dresses! An evening party was

also held at Haldimand Beach in the home of Mrs. P. Stanley as chilly weather kept the ladies inside. Singing with piano and guitar accompaniment and refreshments were enjoyed. Some of the brave ones went out and built a bonfire on the beach.

Articles read: "Opening Packages," "Potatoes," and "Thanks for Your Eyes" at **Eardley**; "Canadome" and "Sugar and Substitutes" at **East Angus**; "How to Achieve Success" and "Honesty Comes First" at **Lennoxville**; "The fish processed and packaged in the stores is safe for consumption" at **Melbourne Ridge**; "Skimmed Powdered Milk, Bread and Frozen Foods," "Margarine First Produced in 1869," "Ontario's Education Troubles," "Young Transients Take to the Road — Is This Normal?" at **Waterloo-Warden**; "Pollution" with a special note not to use coloured toilet paper at **Denison Mills**.

Eardley, Wyman and **Beechgrove** have been gaining information on judging handicraft for fairs. Miss C. Ward and Mrs. Wm. McMorine, **Melbourne Ridge**, knit 15 pairs of socks, 10 pairs of mitts and several scarves during the year. These articles are to be sent to the Dixville Home for Retarded Children. This branch was also hostess at a birthday party at the Wales Home for the aged with games and refreshments being enjoyed.

Talks, programs, "School Systems in the U.S." at **Denison Mills**; Discussion on drugs at **Canterbury**; review of "Action Canada" with each member taking part at **Aylmer East**.

ore entertained **Baldwin-Cartier** branch, held a food sale and sent 50 sunshine boxes to sick members.

Jerusalem-Bethany and some members of **Pioneer** chartered a bus and visited Maxville Manoir, a beautiful home for the aged with very spacious grounds situated on the outskirts of Maxville, Ontario. The visitors were very impressed with the "Manoir" and found the tour through the buildings interesting. They thoroughly enjoyed the afternoon tea which was served to them.

Branches reporting Handy-bags for a cash donation for the "Canadian Save the Children" are **Stilby, Scotstown, Canterbury, East Angus** and **Wright**.

Cakes were given to the Senior Citizens Home by **Inverness**. They also made plans to cater the I.O.O.F. supper in the fall. **Winnipeg's Mills** are also making catering plans — for a wedding reception and the branch also plans to help with a shower for a member's daughter.

Some interesting roll calls: a discussion on a recent medical discovery at **Canterbury**; quoting an old proverb, **East Angus**; quilt patterns, **Denison Mills**; each member introduced a guest, **Melbourne Ridge**; repeat one line Mary Stewart Collect that in our opinion would help to make a better citizen, **Richmond Hill**; relate a story pertaining to an early settler in the vicinity, **Granby**; guess, within 10 pounds, the weight of your right-hand neighbour, **Waterloo-Warden**; bring an old photo of yourself in an envelope for "guessing who",

Gaspe; bring something for a food sale, **Dartmouth River**; one way we can be a good citizen in our community, **Aylmer East**.

Demonstrations: **Melbourne Ridge** — Cro-knitting, which is a combination of crochet and knitting; **Brownsburg** — Crewell embroidery and its origin.

Contests: Stanbridge East — naming old and new automobiles; **Eardley** — guess how many articles in paper bag; **Spooner Pond** — the largest number of small stones held in one hand, number of peppermints in a jar, number of beans in a milk bottle (just some of their picnic activities enjoyed by both children and adults).

Gaspe branch to hostess the Fall Fair. Gaspe County branches busy working on articles for the Fair.

Fund-raising projects: **East Angus** —proceeds from talent money; **York** members brought patchwork quilt squares to be sold; **Dartmouth River** plan an amateur hour.

Rupert catered to a wedding and heard a poem, "Grandma's Rocker Rusty." Report on flowers planted at cemetery, also memorial service.

Lakefield and **Arundel** held their annual bazaars and food sales. Lakefield, as usual, at Kerr's Farm. Their quilt was raffled off. Arundel also had the drawing on a quilt, and the large crowd which gathered in the school enjoyed a concert. A bus load of members from other branches in Argenteuil county also enjoyed Arundel's evening.

Dewittville's 13 members, five visitors and 20 children spent a most pleasant afternoon around the pool at the home of the President, Mrs. Greenbank. A picnic lunch at noon, swimming, a brief business period and a social time all contributed to a very enjoyable afternoon.

Counties reporting this month: Argenteuil, Compton, Chateaugay-Huntingdon, Gatineau, Gaspe, Megantic, Missisquoi, Montcalm, Pontiac, Shefford, Sherbrooke and Richmond.

Thank you, Hazel Clarke, for "The Last Word" in the August issue of the Macdonald Journal. (You're more than welcome.)

Secret of Happiness

Members of Rawdon W. I. (Montcalm County) have found the great secret of happiness — not in getting but in giving, not what you do for yourself but rather what you do for others. A smile and a helping hand are carried by several W.I. members each week as they enter the Heather Hospital for the chronically ill at Rawdon. Lonely and bedridden patients are especially cheered as they chat with a friend. An opportunity is at hand for bedridden patients to send a message "in their own words" as the visitor writes a letter.

For patients at the hospital who are able to participate, it is a thrill to go for a sleigh ride in winter, lovely to picnic at the falls in summer and wonderful to be taken to the stores in Joliette to do one's own shopping — courtesy of the Rawdon W. I.



At Hatley Fair Mrs. W. Emery is shown sitting in a 125-year-old handmade rocking chair.

Rawdon's August's tea and bake sale was most successful with one of the members winning the hooked rug in the raffle (this rug had been hooked and donated to the W.I. by a grateful patient of the Heather Hospital).

A Time for Tours

In July, 25 members of the Missisquoi County met at the museum in Stanbridge East and enjoyed a tour through the beautiful countryside. They travelled through Frelighsburg, Abbott's Corner, through the apple country to Dunham where they had a delicious lunch in the church basement. They then went on to the County President's home for apple juice and apple cider.

In August, the Fordyce W.I. chartered a bus and 52 members and friends motored to Upper Canada Village where they spent a most enjoyable day.

A Presidential Farewell Message

"The end of my official life with ACWW is approaching and now is the time to take farewell as your President. This may sound an old and oft repeated phrase but I would like to say that the six years as your President have been six wonderful years whose memory will be alive, as it is today, till the end of my life. Six years is a long time and, as

a mother, a daughter and a wife, it has been sometimes difficult to make decisions, torn between the two loyalties — home and work. In some important milestones of my life I have been far away from home but what compensated for the heartaches was the all absorbing interest of the work. Work for ACWW makes all personal sacrifices worthwhile.

"The extension work of an ACWW President is a journey through various scenic changes but one thing remains the same and that is the great human heart. In the last six years, no matter where I have been, I have felt its touch, its compassion, its beauty and the innate kindness of people and the friendship of those who are together in this international work.

"ACWW, with its millions of members around the world, is a force which can play an extremely vital role both at national and at international levels. Let us not forget the strength that is inherent within us. Let us not dwell in the negative but be positive in our thoughts and actions."

Mrs. Aroti Dutt,
President,
Associated Country Women
of the World.

Staying on the Map

The village of Hatley may have lost its post office, but its inhabitants are making sure it

stays on the map and such a pretty little village should. The first white settler came to Hatley in 1793. In 1795 the land was surveyed and divided into lots and named after a town in England. This year the Hatley W.I. organized what they hope will become an annual event — a May Fair. For the Fair the people of Hatley displayed articles old and new — everything from handmade sap buckets to modern handicrafts. There was also a refreshment booth with homemade cooking.

A Most Remarkable Woman

In March, Mrs. E. A. Bulley became the new, dynamic President of the Arundel W.I. That in itself is not unusual. However, on July 4th Auntie Pinkie, as she is known to most, celebrated her 87th birthday. She was born Catherine Estelle Smart in Montreal, Quebec, in 1884. In 1907, she married Ernest A. Bulley, a long time friend and her choir director. They lived in Montreal and were active in many church choirs in and around Montreal. At one time Mrs. Bulley was the President of the Outremont Women's Club.

It was in 1947 that the Bulleys moved to Arundel. They immediately joined in all the community activities. Her soprano voice and his tenor soon joined the United Church choir. For several years Mrs. Bulley operated a tea room. She then opened a shop called the "Knobby Little Gift Shop." There she made and sold quilts, gifts and souvenirs. Many a person can remember saving his allowance to buy Mum a gift and having a little left over to buy an ice cream after buying a pretty china vase for a few pennies. These

special little purchases must have astically cut the profits.

1946, Mrs. Bulley had been instrumental in starting the Women's Institute in Arundel. She has been President once before, has held an office or been a member most of the time. The committees were always in charge of the program for bazaars or lawn parties, usually joining in for a well rendered duet of long time favourites.

This year the Arundel branch has been considering folding due to dwindling membership and general lack of interest. Since resuming since "Auntie Pinkie" has nagged and cajoled the members into attending meetings and has again boosted the membership by six new members. So far this year she has planned and organized the branch's 25th anniversary celebrations, chaired each meeting, arranged to have the school library not open for summer use, planned the bazaar and arranged the evening program. She is an active region member, directs the choir at the Grace Anglican Church, is the organist at St. George's Church, Rockway, and soloist at four parish churches. She runs a book stall and a white elephant sale at Legion, W.I. and United Church funding raising affairs. She also maintains her own home and writes a weekly column for the Lachute Watchman.

"Auntie Pinkie" says that she has only one complaint and that is being stuck with a 30-year-old head and an 87-year-old body. Her advice to all of us is to keep alive.

Highlights of a 50th Anniversary

The 10, 1971, will long be remembered as a historic day in the life of the Stanbridge East branch of the Women's Institute, for on that day they celebrated their 50th anniversary.

A party was held in the Masonic hall in Stanbridge East, which seemed most fitting as the W.I. members had assisted in building the hall, the first one having been destroyed by fire. Spring flowers were used to decorate the room, the speaker's desk having a

lovely arrangement of red and white carnations.

The buffet table, covered with a gold cloth, was centred with the cake, made in the form of a book and decorated in blue and gold with the dates 1921-1971. This was made by a member, Mrs. Charles Deschamps. Candles and flowers completed the table setting.

The branch President, Mrs. John Wanzer gave the address of welcome. Mrs. Karl Wescott played the piano. Mrs. Neil Creller introduced the guests: Mrs. Simon Bidner, County President and Mrs. Ella Brown, daughter of Mrs. George Beach, the first President of the Q.W.I. The Charter Members were introduced: Mrs. Charles Moore, Mrs. Asa Westover, Mrs. Aubrey Collins, Mrs. Bert Laycock, Mrs. Roy Fortin and Miss Irene Corey. Mrs. Westover and Mrs. Collins were unable to attend. Former members were also introduced.

The Secretary, Mrs. Clifford Rhicard, read a letter of thanks from Mrs. S. Davitt for messages received during her stay in hospital. Mrs. Rhicard paid tribute to Mrs. Davitt who had planned the anniversary celebration. It was a keen disappointment that she was taken ill and could not attend the celebration.

The Organization Minutes of March 1, 1921 were read by Mrs. James Symington, and those of the first meeting by Mrs. Milton Tait.

Mrs. Rhicard presented a 50-year pin to Mrs. Charles Moore and paid tribute to her work for the W.I. In her reply, Mrs. Moore stated that she had felt it a great privilege to have been a member of the W.I.

Mrs. S. Davitt, who had joined at a later meeting in the same year, was also presented with a 50-year pin by Mrs. Bidner, who went to her home to make the presentation. Mrs. Davitt expressed her joy at receiving this honour.

Mrs. Bidner gave an excellent address, as did Mrs. Brown, both expressing the privilege of being a W.I. member.

Mrs. Rhicard presented Life Membership pins to Mrs. John Wanzer and Mrs. Neil Creller, and told of the contributions they had made through the years to the branch and to the county.

Mrs. T. Tomkinson presented 25-year pins to: Mrs. Frank Corey, Mrs. C. Rhicard, Mrs. N. Creller, Mrs. G. Tremblay and Mrs. James Moore. Mrs. Tomkinson, in her usual jovial manner, gave humorous thumbnail sketches of the recipients, which caused a lot of merriment. The social period to end the celebration was much enjoyed.

Agriculture Report from Abitibi County

As the new President of the Val d'Or branch, I made a tour of the grounds of Macdonald College during the recent annual Convention. It is always an enchantment for me to walk under those magnificent maple trees we can not have in our northern country. In my own little nursery I try Norwegian and silver maple, red oak, etc., in the hope that a late, mild fall might harden up those trees.

In Abitibi agriculture is practically nil. The short season does not always permit the harvest of wheat and oats in good condition. The soil, being mostly clay, if well amended, gives better taste and texture to cabbage, rutabaga and carrots. Those hardy vegetables thrive in our area. We should ask the Agriculture Ministry to promote and help the cultivation of these vegetables and leave the tender ones to the south of the province.

As to the activities of the branch in this convenership, it only consists of an exchange of plants among the members, besides sharing our experiences. We participate in the Horticultural Society Exhibition and make floral arrangements with fresh or dried flowers. The nursery is visited at the annual picnic on the grounds in June.

Rose David,
Sullivan, Que.

One Voice for Quebec Farmers?

"Syndicalism Agricole" — What is it? What is Bill 64? What does U.P.A. mean? Farmers in Quebec and people in many related businesses and organizations are asking these questions. It is time to clarify misunderstanding and to bring to light some of the aspects of Bill 64 and its impact on the farming scene.

Bill 64 will be brought before the province's National Assembly when it convenes in late October. The Bill, if passed, will provide "enabling legislation" so that one association may become recognized as the official organization of Quebec farmers. The Bill does not specify which particular association can do this, and, in fact, any group can take the initiative, as long as it fulfills the criteria spelled out in the Bill. Bill 64 is not, as many people believe, a U.C.C. plan. It is a government proposal — and several

groups have presented briefs to it. At the present time, the U.C.C. (l'Union Catholique des Cultivateurs), the strongest farm organization in Quebec, is the only group that comes close to satisfying the requirements of the Bill. The U.C.C. is now in the midst of planning changes in its structure in order to **completely** fulfill the requirements. The idea is to make the U.C.C. a more representative body by removing all language, geographical, and religious barriers so that **all** farmers in **every** part of the province can be truly represented through it. Among these proposals is a name change, from l'U.C.C. to l'Union des Producteurs Agricoles (U.P.A.). Many of the changes will be put before the General Congress (Annual Meeting) of the U.C.C. to be held November 9, 10, and 11.

There are many "ifs" in the issue — if the Bill is passed and if the U.C.C. (as U.P.A.) can meet the requirements, then it will be obligatory for **all** farmers in the province to become members of this "Union." The membership fee (not to exceed \$15.) will be deducted at the point of delivery of the farm product. This means that whether one markets onions or hogs, maple syrup or tobacco, milk or wool, etc., the annual fee is going to be taken off payment. You might be interested to know that the Bill says a two-thirds majority at the l'Union Annual Meeting is required before the maximum set for the membership fee can be changed from what it now reads in the Bill — \$15.

The new organization will be organized at different levels, just as the U.C.C. is presented organized — locally, regionally, and provincially. The provincial group, known as the "Confederation," will consist of representatives from Regional Federations as well as from all Commodity Boards. If, at any time, 50 percent plus one of all producers in the province decide that they are against the Confederation, the Confederation loses its accreditation as the official organization of Quebec farmers, and hence loses the powers it had under Bill 64.

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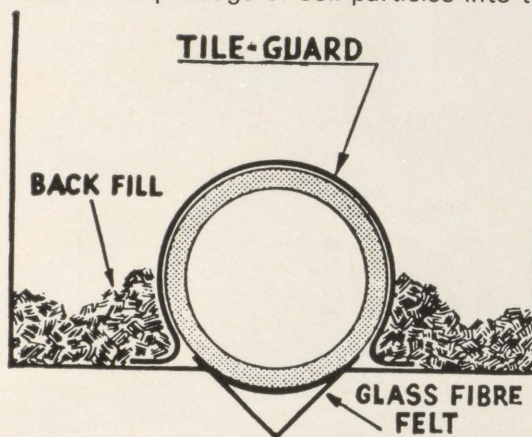


of the English-speaking
ers in this proposed "Union."
have submitted a proposal
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requests. The U.C.C. has met
the Q.F.A. on two different
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posals, and at the last meeting
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Q.F.A. has done this, and has
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is note: "Bill 64 — The
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will be speakers on the
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e answered. Anyone who
s to know more about Bill 64
its significance to farmers
elcome to attend the Annual
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ciation to be held Saturday,
ber 23, in the Farm Centre
e Macdonald College Farm,
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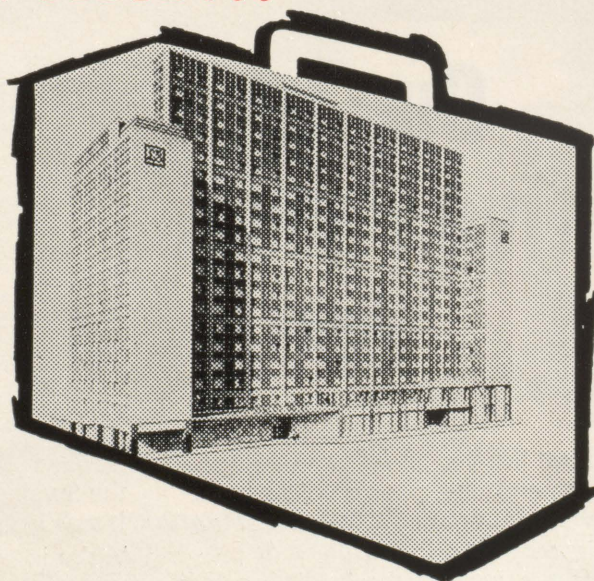
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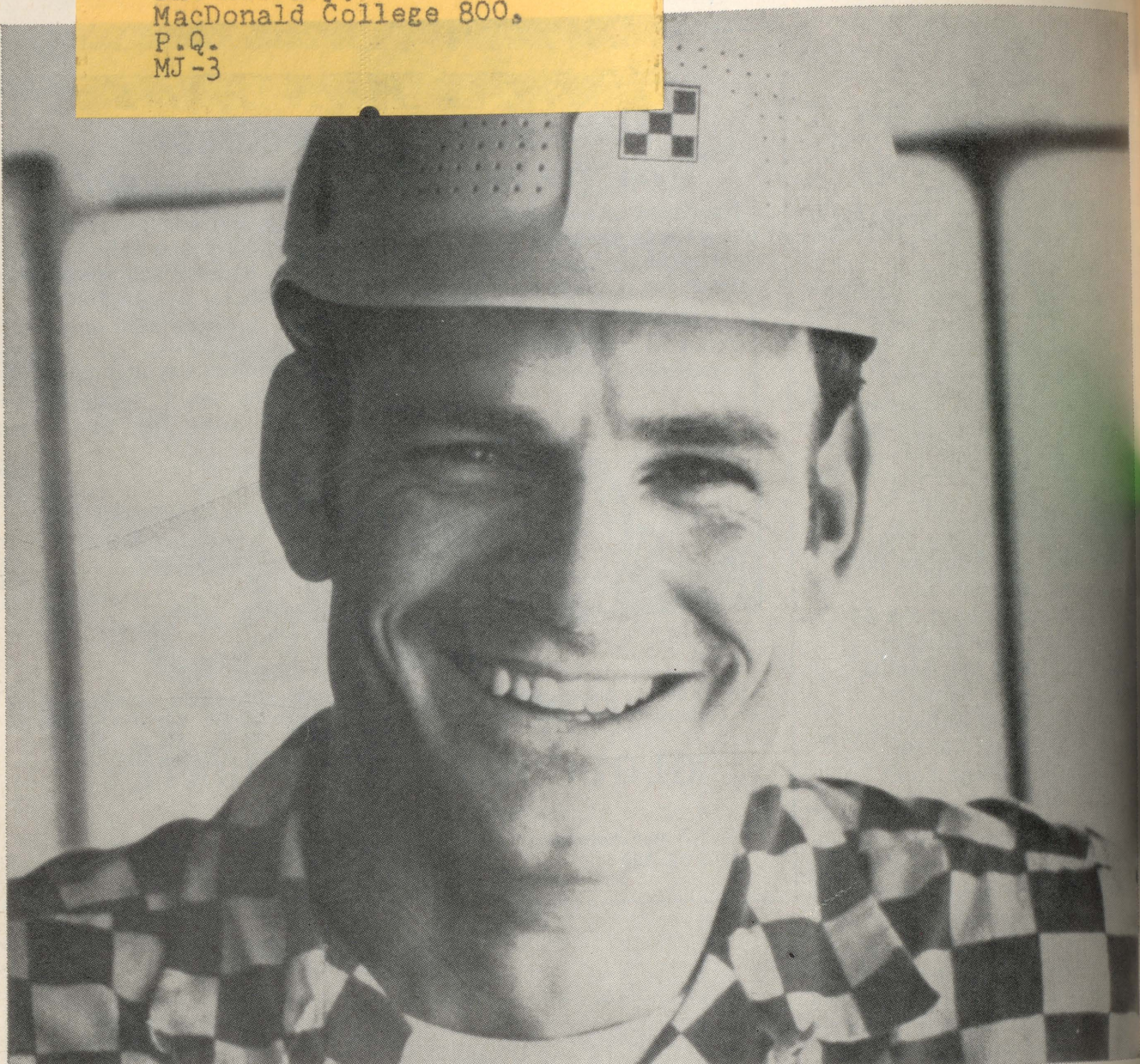


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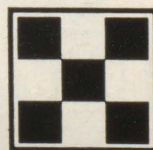
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